

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION FOR LETTERS PATENT

BE IT KNOWN THAT We, Robert G. Johnston and Edward J. Murton, both citizens of the United States of America, and both residents of the State of Florida, have invented a certain new and useful improvement in an Internet Based Program for Generating Roof Contract Specification, of which the following is a Specification:

REFERENCE TO RELATED APPLICATION

This case is a non-provisional conversion of Application Serial No. 60/209,459 and claims the benefit thereof under 35 U.S.C.119(e).

BACKGROUND OF THE INVENTION

Software programs for use by general contractors are known in the art as, for example, is represented by U.S. Patent No. 5,903,010 (1999) to Murdock, et al, entitled Method Of Describing A Building Structure. However, to the knowledge of the within inventors, there does not exist software, whether internet based or otherwise, capable of providing to a potential end user, such as a property owner or local contractor, a complete roofing specification for a particular zip code within the United States capable of taking into account all applicable local, state, and federal building codes, while providing decision

support databases (DSDs) for online use by the user in a decision tree/questionnaire process which, when completed, can produce a fully usable roofing and/or waterproofing specification and optimized as to the numerous variables.

Software such as the above is particularly adaptable to use through the internet such that individuals, businesses and institutional entities, in whatever geographical location, can secure, at minimal cost, a high quality roofing specification including associated suggestions as to qualified local contractors, product vendors, and pre-construction professionals such as architects, engineers, and attorneys. In the absence of such a system, the end user often has little basis upon which to measure the integrity or competence of a local roofing contractor, or to communicate therewith in an informed fashion. It is thereby apparent that a long felt need has existed for such an on-line facility.

SUMMARY OF THE INVENTION

The present invention relates to an internet based software program in which, on the basis of a geographic, GPS (geo-stationary positioned satellite) or an appropriate zip code, together with information with respect to type of structure, e.g., commercial, institutional, or residential, a user may execute a questionnaire consisting of various parameters of a roof to be replaced or repaired and, integrally therewith, access decision support databases for each question of such questionnaire, wherein the supporting databases themselves provide access to a library of reference details and diagrams to illustrate to the user the physical appearance of the various options expressed in the decision support databases of respective questions of the questionnaire.

The questionnaire is, additionally, provided with a variety of prompts, hints, warnings and system suggestions to aid the user in navigation through the questionnaire and its supporting databases. Upon completion of the questionnaire, the user is able to express product/vendor preferences as to various aspects of the roofing project. Thereupon, the system generates a project specification, compliant with local, state, and federal building codes, the same inclusive of priority rules, thus producing an operational roofing specification inclusive of instructions to bidders, general legal conditions, general property protections, environmental requirements, application and permit

procedure, insurance and licensing requirements, unit pricing, metal/flashing section, sealant section, and bid form. Also furnished to the user is a list of approved manufacturers for the geographic region, links to contractor promotional information, and contractor evaluations and recommendations thereon from the system itself.

It is accordingly an object of the present invention to provide an internet based software system for generating a fully code compliant roofing and/or waterproofing specification which is zip code specific to any location in the United States and usable in residential, commercial and institutional application.

It is a further object to provide a software system of the above type in which an end user, through the execution of a roof parameter questionnaire, can, at nominal cost, secure a fully usable construction document.

It is another object of the invention to provide a software program which, through a variety of databases, can provide to the user suggestions and options across a broad range of parameters inclusive of visual displays of roofing types, deck types, roof pitch types, supporting metal elements, and a variety of accessories.

It is a yet further object to provide an internet based program of in which an end user may be furnished with information, suggestions, evaluations, prompts, hints and warnings relative to construction products, contractors and other issues.

It is a further object to provide a software system of the above type which is user friendly to lay people not having any background in the area of roofing or waterproofing and/or that are unknowledgeable with respect to the range of options, both in terms of products and services, which exist a roofing project.

The above and yet other objects and advantages of the present invention will become apparent from the hereinafter set forth Brief Description of the Drawings and Detailed Description of the Invention as set forth herein.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a flow diagram showing log-on to the homepage of the present system and the choice points therefrom.

Fig. 2 is a flow diagram showing basic choice options, relative to forms of construction, which follow the diagram of Fig. 1, and further showing a description and cost relative to a roofing specification which the system user is solicited to purchase.

Fig. 3 is a flow chart providing an overview of the balance of the roofing specification system and showing generally therein geographic identification, the questionnaire and questionnaire decision support databases, product selection options, and the compilation of a customized specification.

Fig. 4 is a detailed flow diagram of the system questionnaire, its decision support databases, and the library of searchable graphic details and diagrams.

Fig. 5 is a flow diagram showing in detail the contents of the customized specification, its supporting building code databases, its database for determining priority rules as between city, state and federal codes, and contractor select options and evaluations.

Figs. 6 to 9 are examples of prompts, hints, warnings and suggestions, referenced in Fig. 4.

DETAILED DESCRIPTION OF THE INVENTION

The internet based software system as set forth below is designed to enable consumers, as well as professionals, to obtain a customized individual specification for a particular project, whether residential, commercial, or institutional, to download a resulting specification, duplicate the same, and then to solicit competitive bids, from suggested contractors, for their homes or facilities. Various aspects of the same will, it is anticipated, be made available to architects, engineers, consultants, contractors, facility managers, institutional officials, commercial property owners, and private homeowners. The foregoing system may be viewed as a "specification on demand" system wherein by a proper completion of an electronic questionnaire, as supported by various decision support databases and a library of visual/graphic details and diagram, any member of the public can download a complete geographically code compliant specification for a roofing or waterproofing project.

Entrance to the instant software system is shown in flow diagram format in Fig. 1, that is, after log-on A the user reaches the system homepage 100, referenced in Fig. 1 as SPEC TECH. After review of some basic introductory material, as well as a brief site access agreement, the user is asked, at choice point 150 to indicate whether he is interested in roofing 200 or waterproofing 220. This answer will affect the content of questionnaire 600, discussed below.

However, in either event, the program will then (see Fig. 2) bring the user to decision point 250 where he must indicate his area of interest as between commercial 300, institutional 320, or residential 340 whereupon, through the use of an animated icon known as ARTi, The Certified Cyber-roof Consultant, the user is provided with a brief tour of the operation of the program, the product cost, the benefits of using the system generated specification to bid upon a roofing or waterproofing project (block 404). This point is indicated at block 400 of Fig. 2. At block 202 cautions and warnings about the product are explained. Therein a toll free phone number is provided for assistance at any time during navigation of the program. At decision point 420 the user must decide whether or not to buy the system service. Should he choose not to proceed (block 440) the user is returned to the home page 100. Should the user choose to proceed, he is taken to a payment information screen 460, whereupon a credit card transaction is effected over a secure server supplied by the host. If the user's credit card information, name, address, city and zip code data results in an approved transaction, the user will receive a confirmation number. If the transaction is declined, the user will be given options to attempt the purchase with another credit card or will return to the home page. When an approved transaction occurs, an e-mail will be sent to a system e-mail account as well as other advice to the system administrator.

Turning to Fig. 3, the user is asked to enter a project specific zip code. However, in the event that zip code information is not available to the user, coordinates from a geo-stationary positioned satellite (database 520) or geographical data in combination with software such as the Chicago Mapping System (database 540) may be used to produce a proper zip code for entry at block 500. Thereupon path 550 is taken thus leading the user to questionnaire 600 with its decision support database (DSDs) which are the core of the instant system. The same is shown in greater detail in Fig. 4.

Continuing to questionnaire 600 (see Fig. 4), the system user is presented with a multi question questionnaire consisting of various questions, most of which are multiple choice in nature. As such, there is provided a decision support database for each question which provides to the user a list of answer options which are not prohibited by a building code or other regulation as determined at the zip code entry step 500. Supportive of the decision support databases (the DSDs) is a library 700 of reference details and diagrams which are provided to illustrate the options presented by the DSDs. These graphical details are not only searchable but, as well, may be downloaded for a fee as indicated in Fig. 4 by block 710.

At the beginning of questionnaire 600, the user is asked at Question 605, to identify his existing roof type. This will normally comprise one of the following:

- ☐ Mineral surface roll roofing
- ☐ Mineral surface roll roofing double coverage.
- ☐ Laminated double layer strip shingle.
- ☐ Single thickness shingle strip.
- ☐ Self sealing strip shingle 3-tab.
- ☐ Self-sealing strip shingle no cutout.
- ☐ T-lock.
- ☐ Slate.
- ☐ Tern Metal.
- ☐ Metal roof systems.
- ☐ Clay tile flat.
- ☐ Clay tile Spanish S.
- ☐ Clay tile barrel.
- ☐ Clay interlocking profile tile.
- ☐ Clay interlocking flat tile.
- ☐ Clay plain flat non-interlocking tile.
- ☐ Concrete interlocking profile tile.

- ☐ Concrete interlocking flat tile.
- ☐ Concrete plain flat non-interlocking tile.
- ☐ Concrete flat tile.
- ☐ Concrete Spanish S Tile.
- ☐ Concrete barrel tile.
- ☐ Fiberglass shingles.
- ☐ Stone shingles
- ☐ Cedar wood shingles.
- ☐ Built up.
- ☐ Modified bitumen.
- ☐ Thermoset single-ply.
- ☐ Thermoplastic shingle-ply.
- ☐ Sprayed polyurethane foam.
- ☐ Liquid applied coatings.

Where it is necessary or useful to know the type of manufacturer of the existing roof, this information may be searched through database 607.

Proceeding along Line 609, the user is asked at Point 610 to identify the deck type. The answer options thereto are stored in DSD 612 and would typically comprise the following:

- ☐ Wood plank.

- ☐ Wood tongue and groove.
- ☐ Plywood $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ thickness,
- ☐ Metal rib.
- ☐ Tectum – wood fiber.
- ☐ Concrete.
- ☐ Light weight insulating concrete.
- ☐ Gypsum.
- ☐ Pre-cast concrete.
- ☐ Other (as may be specified by the DSD).

Proceeding along Line 614, the user is then asked to enter the approximate age of the existing roof at question 615. The available options, as stored in DSD 617 will be the following:

1. 0 to 5 years.
2. 5 to 10 years.
3. 10 to 15 years.
4. 15 to 20 years.
5. 20 to 25 years.
6. More than 25 years.

Proceeding along Line 619, the user then reaches Question 620 relative to age of the existing structure. From DSD 622, the user is presented with the following possible answers:

1. 0 to 10 years.
2. 10 to 20 years
3. 20 to 30 years.
4. 30 to 40 years.
5. 40 to 50 years.
6. More than 50 years.

Proceeding along line 624 to Question 625, the user is then asked to indicate the approximate pitch/slope of the roof. The possible answers thereto are provided in DSD 627, which are as follows:

- ☐ Flat.
- ☐ 1/12
- ☐ 2/12
- ☐ 3/12
- ☐ 4/12
- ☐ 5/12
- ☐ 6/12

- ☐ 7/12
- ☐ 8/12
- ☐ 9/12
- ☐ 10-15/12
- ☐ 15/20/12

Proceeding along line 629 to Question 630 relative to roof recovery, the user is asked to indicate, with the help of DSD 632, his project objectives, for example, roof replacement, replacement of deck, or new construction. At any point in the questionnaire, any of prompts 660, hints 665, warning 670, or ARTi suggestions 675 may appear on the screen to assist or guide the user. This is particularly true with respect to the various new roof questions which follow.

Proceeding along Line 631 to Question 633, the user is asked to indicate the new roof type of interest. This question is supported by the menu of question 605 and DSD 633.1 which contains the information of answer 605 and has access to the searchable library 700 of graphic details and diagrams to which the user may make reference in determining his answer to Question 633. As such, the user is able to access actual images and diagrams to obtain a better idea of what a particular roof type of a particular manufacturer would look like. As above noted, at any point in the questionnaire, any of said prompts, hints,

warning or suggestions may appear. For example, if the user indicates a preference for a new roof type at Question 633 which is incompatible, or may require an expert opinion of a pre-construction profession such as an architect or engineer, relative to a prior answer, e.g., deck type or roof pitch, a pop-up ARTi window with such a hint, warning, or suggestion will appear regarding that issue.

Proceeding along Line 634 of Fig. 4, the user is asked to indicate a "yes" or "no" relative to various accessory options which appear at Question 635 as supported by DSD 637. For example, he will be asked to answer yes or no with respect to the following possible accessories: soffit, fascia, gutters, downspouts, chimney, skylight, turbine vents, plumbing vents, and other vents. Sources of such accessories are accessible through DSD 637 and pictures thereof through the visual database 700.

Proceeding along Line 639 to Question 640, the user is asked to indicate the type of metal he wishes to use. Whereupon he may choose between various options including copper, lead, stainless steel, and galvanized metal.

Proceeding along Line 644 to Question 645, the user is asked to indicate the duration of a desired product warranty for the project. The typical

choices therefore will be that of 15 years, 20 years, 25 years, and more than 25 years. Legal and other details respecting the issue of warranties are accessible through DSD 647.

Proceeding along Line 654 to Question 655, other questions may appear, this potentially as a function of zip code selected or of particular answers to prior questions, many of which will require access to pre-construction professionals such as engineers, architects or lawyers. The names of such professionals for the zip code selected at block 500 of the program are available through DSD 657. As above noted, use is made of the animated figure known as ARTi, the function of which is to render more explicit the hints, warnings and suggestions of databases 655, 670 and 675 respectively, referenced above. For example, at Question 640, ARTi might appear and make a comment such as the following:

“When specifying a roof system that you expect to get 20, 25 or more years of service of, it is always a good idea to specify copper, lead or stainless steel for the valleys.”

Further, where ARTi believes that the user has made a selection which does not conform to industry standard roofing practice, it will automatically issue a caution or warning and, as well, will make appropriate suggestions and

recommendations at that particular point in the questionnaire 600. In this sense, ARTi may be viewed as the programmed intelligence of the system.

Where an issue of product selection occurs, as in the case at block 800 (which through path 690 follows the questionnaire 600), ARTi provides recommendations relevant to selections/answers made by user and provides links to manufacturers' promotional information. Such suggestions may also appear at other points of the programs as is set forth below.

Proceeding past product selections 800, a step which will be an option to those unknowledgeable in the building industry, one proceeds to block 900 (see Fig. 5). Therein, the user is provided with a fully code compliant written specification which, through the use of city, state, and federal building code databases 920, 930 and 940 respectively, as well as a building code priority database 900, comprises an entire specification including the most stringent applicable code, instructions to bidders, general conditions, general property protections, environmental requirements and issues, application/permit procedure, insurance and licensing requirements, unit pricing, metal/flashing section, sealant section, and bid form inclusive of lump sum pricing and itemized costs. An example of a specification, produced by the present system, appears as follows:

Project Information Sheet

Date: 6/1/2001

Project Address

600 West Hillsboro Blvd.
Suite 110
Deerfield Beach, FL 33441

Owner's Information

Bob Johnston
600 West Hillsboro Blvd.
Suite 110
Deerfield Beach, FL 33441
866-222-7663

Existing roof deck: spacing	Plywood (4' x 8' sheeting) 3/4 size - Spec on stud
Project type:	Re-roof existing roof
Building type:	Single family dwelling
Existing roof type:	Clay tile
New roof type:	Asphalt shingles

SECTION 00800

GENERAL CONDITIONS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. This work directive is a performance requirement of work to be performed by direct utilization of the Contractor's expertise in the re-roofing of the existing residential structure, referenced as "Project" on the cover sheet of this Specification, and assuring that said roof system is water-tight.

1.2 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment, and supervision necessary for the complete and satisfactory installation of the work as described in Section 01100 – Summary of Work, and as may be required by provision of the latest edition of the state and local governing building code.

1.3 BIDDING PROCEDURE

- A. Before submitting this bid package, the Contractor shall carefully examine the construction documents and work requirements, visit the site of work, and become thoroughly familiar with all existing conditions and limitations. The submission of this bid package will be construed as evidence that such an examination has been made, and later claims for labor or materials required, or for difficulties encountered which could have been foreseen, had such an examination been made, will not be recognized.

- B. Each base Bid shall be based upon the materials, systems and equipment required by the Bidding Documents without exception. Bidders who propose to offer a substitute for any required materials, systems or equipment shall attach to their Bid a separate listing indicating each proposed substitution; the Specification Section and Paragraph reference(s) covering the material; the reason for proposing the substitution; and the total net amount to be added to or deducted from the base Bid Amount if the Owner should elect to award a Contract on the basis of the proposed substitution.

- C. All bids shall be valid for thirty (30) days after the bid date.

1.4 QUALIFICATION (CONTRACTOR)

- A. The roofing Contractor shall have no less than three (3) years experience in the installation of roofing systems similar to those required for the project, and be capable of showing successful installations similar to work required for this project.

- B. The Contractor must maintain a full time supervisor/foreman on the job site during times that roofing work is in progress. Supervisor must have a minimum of five (5) years experience in roofing work similar in nature and scope to this specific assembly.

1.5 CONTRACTOR USE OF THE PREMISES

- A. Owner shall provide Contractor a safe area to store materials and equipment.

- B. Contractor shall limit his use of the premises for Work and for storage to allow for:

1. Compliance with regulations regarding Fire Lanes and Fire Exits; do not block handicapped parking.
2. The Owner's use of the premises, (free from obstruction).
3. Construction or operation by the Owner or other Contractors.

1.6 WORK SEQUENCE

- A. Install temporary protection in any area of planned roofing work prior to commencement of work.

- B. Temporary protection in any area to remain in place until all roofing in that area is complete.

1.7 REGULATORY REQUIREMENTS

A. All materials and processes shall conform to all local, city, and county requirements.

B. All application, material handling, and associated equipment shall conform to and be operated in conformance with all safety requirements. Specific attention is made to O.S.H.A. and EPA requirements.

C. Contractor must comply with OSHA requirements for safety and fall protection at all times.

D. All federal, state, local and Owner fire and safety requirements shall be complied with.

E. At no time shall the Contractor allow the use of radios, tape players, CD players, or other distracting devices during the course of construction.

F. Contractor shall not allow workmen to use loud or expletive language during the full course of the work.

G. Absolutely no alcoholic beverages, or the use of such, will be allowed or tolerated on jobsite.

H. Absolutely no illegal drugs, or the use of such, will be allowed or tolerated on jobsite.

1.8 SUBMITTALS - (PRIOR TO AWARD OF CONTRACT)

A. Contractor shall show evidence of all requisite insurance policies and hold completely harmless the Owner during the full period in the course of the work as defined herein.

B. Contractor shall furnish a sample of specified warranties.

C. Contractor shall provide all other submittals indicated in these specifications.

1.9 SUBMITTALS - (AFTER AWARD OF CONTRACT)

A. Copies of all applicable building permits must be submitted to Owner prior to the scheduled date of commencement.

B. Copies of all Manufacturer literature and specifications for selected product.

C. Color of Product (sample piece).

1.10 LIABILITIES/INSURANCE/LICENSES/PERMITS

A. The bidder assumes full duty, obligations and expense of obtaining all necessary licenses, permits, inspections, and insurance certificate(s) required. The bidder shall be liable for any damages or loss to Owner occasioned by negligence of the bidder (or his agent) or any person the bidder has designated in the completion of his contract as a result of the bid. Contractor shall be required to furnish a certified copy of all licenses, certificates of competency or other licensure requirements necessary to practice his profession as required by State Statute and/or current local governing building codes. Failure to furnish these documents or to have required licenses will be grounds for rejecting the bid.

B. All Bidders shall furnish to Owner, certificate(s) of insurance which indicate that insurance coverage, as listed below, has been obtained from a surety company authorized to do business in the State in which the Project is located.

1. Workers compensation insurance for all employees of the contractor as required by State Statute.

a.) Contractor is responsible for confirming and obtaining evidence that all Sub-contractors have the appropriate workers compensation insurance coverage for all their employees, sub-contractors, etc.

2. General liability insurance on comprehensive basis in an amount not less than **one hundred thousand dollars (\$100,000.00)* combined single limit per occurrence for bodily injury and property damage.

3. Automobile liability insurance covering all owned, non-owned and hired vehicles used in connection with the award, in an amount not less than **one hundred thousand dollars (\$100,000.00)* per person and **three hundred thousand (\$300,000.00)* per occurrence for bodily injury and **one hundred thousand dollars (\$100,000.00)* per occurrence for property damage.

**This amount may be increased or decreased in accordance with Owners requirements.*

4. All insurance shall be issued by companies with a "B+VII" or Better "Best" Rating, as shown on Best's Latest Rating Publication and authorized to issue insurance in the State the Project is located in. It shall be the responsibility of the contractor to notify Owner of cancellation, lapse, or materials modification of any insurance policies.

5. Failure to fully and satisfactorily comply with Owners insurance requirements as set forth herein, may cause an automatic rescission of the bid award. The bidder holds Owner harmless and indemnifies and covenants not to sue Owner by virtue of such rescission.

6. Insurance certificates, submittals, references and a specimen warranty shall be included and returned with the required Bid Documents.

1.11 ENVIRONMENTAL REQUIREMENTS

A. Contractor shall not remove existing roofing when weather conditions threaten the integrity of the building contents or its continued occupancy.

B. Contractor shall maintain continuous temporary protection during and prior to installation of the new roof system. Contractor shall maintain a watertight condition throughout entire roofing project.

C. Contractor shall provide portable toilet facilities on the job-site. Upon completion of the Project, Contractor shall remove portable sanitary facilities from site and clean and disinfect area as necessary to ensure sanitary health conditions.

D. Contractor shall provide Drinking Water to employees on-site.

1.12 SCHEDULING

A. Prior to commencement of work, a pre-roofing meeting may be held with all parties concerned including Superintendent, Subcontractors, and Owner to discuss the construction schedule and finalize all details.

1. The commencement of the work shall be defined as "the mobilization of workforce and equipment to the job-site".

2. The Contractor must utilize sufficient manpower to complete this job within the specified time limits.

B. Completion of the work shall be defined as "that day of completion of all works as stated in this Works Description".

C. The term "day" as used in this Works Directive shall mean "working day" (excluding weekends and holidays). A "working day" shall be considered a day with one hour or less of precipitation.

D. Contractor shall schedule all related work to coincide with the installation of the new roof system.

E. The existing roof material and deck (if applicable) shall be removed in sections no greater than the Contractor can replace and dry in that working day.

F. All roofing debris shall be immediately removed from the roof surface upon separation from the roof deck.

G. Clean all gutters and valleys of excess materials.

H. The entire deck surface shall be completely free of previously removed roofing material and debris prior to starting installation of the new roof system.

1.13 DELAYS AND EXTENSION OF TIME

A. The contract shall be completed within the time set forth in the Contract Documents. The Owner may grant extensions to the construction time for the following reasons only:

1. Any act or neglect of the Owner.
2. Changes in the work approved by the Owner.
3. Strikes or unusual delays affecting manufacture or delivery of materials.
4. Lockouts
5. Fires
6. Unusually severe weather.

B. Normal weather conditions pertaining to rainfall and temperature are established by the Climatological Summary based on the U.S. Weather Bureau. The Contractor must offer official proof when requesting an extension of time due to unusually severe weather that the conditions were above the average in this summary. Official proof shall consist of a report prepared by the U.S. Weather Bureau covering the period of the delay and a record of the weather on the site kept daily by the Contractor.

B. Contractor must work continually from Job start through completion.

D. If Contractor abandons Job for a period of ten (10) working days without approval of the Owner, Contract is subject to cancellation.

E. Contractor shall indicate the day of anticipated completion in the space provided on the Bid Form.

F. Contractor shall take into account all contingent work which has to be done by other parties, and shall not plead his want of knowledge of said contingent work as an excuse for delay in his work, or for non-performance.

1.14 PROTECTIONS

- A. Contractor shall protect all shrubs, plants, yard accessories, entry-ways, swimming pools and equipment, as well as any adjacent building surfaces, against damage from the installation of the roofing system.
- B. Contractor shall observe fire and safety precautions as recommended by Asphalt Roofing Manufacturers Association and the National Roofing Contractors Association.
- C. Removal of the existing roof surface will be limited to the area that will be completely watertight that day.
- D. Contractor shall maintain a watertight roof system during the entire construction process.
- E. All debris shall be removed from the roof surface through an approved means of disposal on the ground.
- F. All debris from the roofing operations shall be removed from the job-site daily and disposed of at an approved, suitable disposal site. Contractor shall keep all affected streets, driveways and sidewalks clear of roofing debris and nails.
- G. All means of disposal shall be in a safe manner and in compliance with all O.S.H.A. standards and environmental requirements.
- H. Any dumpsters or trucks shall, at all times, be covered with a tarp to prevent dust and debris from escaping.
- I. If any damage occurs to the Owner's property below the roof (water damage, vibration, etc.) due to the roofing project, the Contractor shall make all necessary provisions to have the damage repaired within five (5) working days from the date of the damage occurring, without any cost to the Owner.
1. It is the responsibility of the contractor to document any pre-existing damage prior to performing the work of this directive.
- L. If the Contractor fails to repair the damage within five (5) working days, the Owner reserves the right to make arrangements to have the repairs made and the cost of the said repairs will be deducted from the total contract price.
- M. Contractor shall restore or replace all damaged finishes and materials around all access corridors, doorways, stair towers, walls, landscaping, etc., that were subject to exposure of the roofing operation, to match the existing conditions.
- N. Contractor shall provide the Owner with a 24-hour telephone number in case of problems arising after working hours during the course of the construction.

1.15 EXAMINATION

- A. Verify that the surfaces and site conditions are ready to receive work.
- B. Verify that all roof openings, curbs, pipes, sleeves, ducts, vents, or other penetrations through the roof, are solidly set, and that all flashings, cant strips, and wood nailers are secure and tight to the building as per this work description.
- D. The beginning of installation of the roof assembly signifies that the Contractor accepts the existing conditions as being in compliance with the requirements of this work description.
- E. In the event of possible hidden conditions being observed by the Contractor, the Contractor shall immediately notify Owner of the extent and cost of repairing the hidden conditions, if any. Hidden conditions are those works, which exist beyond those known areas where the work is being done.

1.16 PRECAUTIONS

- A. All roofing materials shall be kept free of any moisture prior to installation.
- B. Contractor shall protect sheet, or roll goods, liquid materials and accessories against damage and extreme temperatures. Materials may be stored on the roof, with caution, for short periods only. Do not overload structure.
- C. Contractor shall maintain at the job-site all Manufacturer Material Safety Data Sheets (MSDS) regarding all materials used in conjunction with the work. All Materials and Processes must meet OSHA and EPA standards.
- D. Contractor shall not permit excessive traffic or material storage on newly installed roof surfaces.

1.17 WARRANTY

- A. A specimen of the warranty shall be submitted to and approved by the Owner prior to Award of Contract.
- B. Upon completion, the Contractor shall provide the Owner with the specified manufacturer warranties on all roof areas.
- C. Upon completion, the Contractor shall furnish Owner with the following:
 - 1. A complete list of ongoing maintenance procedures, (if applicable).

2. A list of telephone numbers, procedures, and persons to contact should a leak occur. In the event that telephone numbers or address changes take place, the Contractor shall immediately notify the Owner of these changes.

D. After the final completion of all works specified herein, repair of any/all damages, issuance of the warranty by the Manufacturer, and all lien releases, any retained monies of the contract will be released in approximately ten (10) days.

Section 07310

Asphalt Shingles (Re-roof)

Part 1 General

1.1

- A. Materials and methods of application used for recovering and replacing an existing roof covering shall comply with the requirement listed in this specification. Roof repairs to existing roofs and roof coverings shall not be more than 25 percent of the total roof covering of any building and shall not be removed and replaced within any 12 month period unless the entire roof covering is made to conform to the requirement for new roofing.
- B. Structural and constructions loads – The structural roof components shall be capable of supporting the roof covering system and the material and equipment loads that will be encountered during installation of the roof covering system.
- C. Recovering vs. replacement – New roof coverings shall not be installed without first removing existing roof coverings where any of the following conditions occur:
 - 1. Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
 - 2. Where the existing roof covering is wood shake, slate, clay, cement or asbestos covered tile.
 - 3. Where the existing roof has two or more applications of any type of roof covering
 - 4. For asphalt shingles, when the building is located in an area subject to severe hail damage.

1.2

- A. Remove existing layers of roofing down to smooth deck.
- B. Remove all roof related metal, flashings, valleys and edging.
- C. Remove existing roof related nails.
- D. Remove deteriorated wood decking.
- E. Remove deteriorated fascia.
- F. Remove deteriorated soffits.
- G. Furnish and install wood decking to match the deteriorated existing wood deck.
- H. Furnish and install fascia to match deteriorated fascia.
- I. Furnish and install soffit to match existing deteriorated soffit.
- J. Paint new fascia and soffit to match existing paint colors.
- K. Sweep roof clean of any debris before installing the new roof underlayment.
- L. Remove roof debris from jobsite daily.

Part 2 Products

2.1 Asphalt Shingles

- A. Laminated double layer strip shingle.
- B. Single thickness Shingle Strip
- C. Self sealing strip Shingle 3 tab
- D. Self sealing strip shingle no cutout

2.2 References

- A. Material Standards: Asphalt shingles shall have self-seal strips or be interlocking, and comply with ASTM D225 or D3462.

B. Submit requests for substitutions in accordance with provisions of General Conditions.

C. Assortment of colors. ARTi recommends using lighter colors in warmer climates.

2.3 Deck Requirements

A. Nailable wood decks should be fastened solid and meet code requirements. Contractor is required to comply with local code for inspections before covering.

B. Deck slope – asphalt shingles shall be used on roof slopes of 2 units vertical in 12 units horizontal 2 in 12 or greater. For roof slopes from 2 in 12 to 3 in 12, double underlayment application is required.

Caution:

Do not install asphalt shingles on roof slopes less than 2:12.

Part 3 Execution

3.1

A. Underlayment application – For roof slopes from 2 in 12 up to 4 in 12 underlayment shall be two layers applied in the following manner: apply a 19 inch strip of underlayment felt parallel with and starting at the eaves, fastened sufficiently to hold in place. Starting at the eaves, apply 36-inch wide sheets of underlayment, overlapping successive sheets 19 inches. For roof slopes of 4 in 12 or greater, underlayment shall be one layer. Underlayment shall be applied shingle fashion parallel to and starting from the eave and lapped 2". End laps shall be offset by 6 feet.

B. Attachment – Asphalt shingles shall have the minimum number of fasteners required by the manufacturer. For normal application, asphalt shingles shall be secured to the roof with not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 20 in 12 special methods of fastening are required.

EXCEPTION: Asphalt strip shingles shall have a minimum of six fasteners per shingle where the roof is in one of the following categories:

1. The basic wind speed is 110 miles per hour or greater and the eave is 20 feet or higher above grade.

2. The basic wind speed is 120 miles per hour or greater.

3. Special wind zone areas.

- C. Fasteners: Fasteners for asphalt shingles shall be galvanized steel minimum 12-gauge (0.105 inch) shank with a minimum 3/8-inch diameter head. ASTM F1667, of a length to penetrate through the roofing materials and a minimum of 3/4-inch into the roof sheathing. Where the roof sheathing is less than 3/4-inch thick the fasteners shall penetrate through the sheathing. Fasteners shall comply with ASTM 1667.

Caution:

There are building codes that do not allow stapling of shingles.

The National Roofing Contractors Association (NRCA) recommends not using staples to secure shingle roofs.

- D. Ice Protection: In areas where the average daily temperatures in January is 25° F or less, an ice barrier that consists of at least two layers of underlayment cemented together or of self-adhering polymer modified bitumen sheet shall be used in lieu of normal underlayment and extend from the eave's edge to a point at least 24 inches inside the exterior wall line of the building.
- E. Underlayment and high wind underlayment applied in areas subject to high winds greater than 110mph shall be applied with corrosion resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches on center.
- F. Base and Cap flashings – Base and cap flashings shall be installed in accordance with manufacturers installation instructions.
- G. Valleys – Valley linings shall be installed in accordance with manufacturers installation instructions before applying shingles. Valley linings of the following types are permitted by the International Code:
1. For open valley (valley lining exposed) lined with metal, the valley lining shall be at least 24 inches wide.
 2. For open valleys, valley lining of two plies of mineral surface roll roofing, complying with ASTM D249 shall be permitted. The bottom layer shall be 18 inches and the top layer a minimum of 36 inches wide.

3. For closed valleys (valley covered with shingles) valley lining of one ply of smooth roll roofing complying with ASTM D224 Type II or Type III and at least 36" wide or valley lining as described in items 1 and 2 above shall be permitted. Specialty underlayment complying with ASTM D1970 may be used in lieu of the lining material.

H. Crickets and Saddles – A cricket or saddle shall be used installed on the ridge side of any chimney greater than 30 inches wide.

I. Sidewall flashings – Flashing against a vertical side wall shall be the step-flashing method.

J. Other flashings – Flashings against a vertical front wall, as well as soil stack, vent pipe and chimney manufacturers printed instructions.

K. Venting

1. Ridge venting - as per manufacturers instructions.
2. Turbine Venting – as per manufacturers instructions.

L. Sealants – Contractor must follow Manufacturer's recommendations for the application of sealants.

Caution:

When installing laminated strip shingles, nails should penetrate the shingles' double-thickness portion.

For asphalt shingle applications on extreme roof slopes, installing additional fasteners and hand sealing each shingle can help minimize material slippage can help minimize material slippage and buckling and improve shingle performance. Must follow manufacturer's instructions.

Metal Fascia

Part 3 Execution

1.1 Metal Fascia - .032 Aluminum minimum

- A. Metal fascia must fit tight over wood framing.
- B. Metal fascia must be secured with appropriate fasteners.
- C. Metal fascia joints must be sealed with appropriate sealants.
- D. Follow manufacturer's recommendations and instructions.

Section 07710

Drip Edge

.032 Aluminum Minimum

Part 1 General

- A. Drip edge shall be installed as per local building code or as per manufacturer's printed instructions.
- B. Drip edge is installed to protect fascia.

Part 2 Products

- A. Drip edge metal shall be provided in 10ft lengths.
- B. Drip edge shall be formed using a non-corrosive metal.

Part 3 Execution

- A. Metal to be installed and lapped in the direction of the water flow.
- B. Metal should be formed with a 4-inch flange minimum extending onto the roof.
- C. Face of the metal shall be a minimum of 1-1/2 inches.
- D. If face is over 4-inches use a wind clip.
- E. Install flange of drip edge in a bed of plastic cement.
- F. Stagger nails a minimum of 6-inches on center.
- G. Install a layer of plastic cement before installing roofing.

1010.32.1-1010.32.1

- H. Follow manufacturer's detail on drip edge installations.
- I. Nails to be the same metal as the drip edge metal.
- J. Seal all drip edge joint laps.

Section 07710

Valleys

.032 Aluminum Minimum

Part 1 General

- A. There are two types of valleys:
 - 1. Closed valley
 - 2. Open valley
- B. Valleys are used with shingles, wood shingles & shakes, slate, and tile.

Part 2 Products

- A. Valleys fabricated from 16oz Copper, 28 gauge stainless steel, or .032 aluminum will not require maintenance.
- B. 24 gauge galvanized steel may be used. However, this material requires painting periodically. Use only when the roof life expectancy is less than 15 years.

Part 3 Execution

- A. Open valleys should be a minimum of 5 inches shown. The roof should overlap the ends of the flashing a minimum of 6 inches.
- B. Closed valleys for slopes of 6 on 12 or greater should be a minimum of 18 inches wide.
- C. Closed valleys for slopes of 6 on 12 or less should be 24 inches wide.
- D. Open valleys and closed valleys should have a 30 inch wide 30# felt installed underneath.
- E. In areas of heavy snow and ice, a layer of ice and shield underlayment should be installed under the entire length of the valley.

- F. Valleys are formed in 10 foot lengths and should be lapped a minimum of 8 inches.
- G. Edges of the valley should be formed with a hook edge and be cleated on 24 inch centers.

Section 10230

Soffit Venting

Part 1 General

- A. A balanced vent system is one that best utilizes air pressure, thermo effect, and diffusion.
- B. For every square inch of soffit (intake) vent, you must balance with at least one square inch or more of ridge (exhaust) vent.
- C. Soffit venting balanced with ridge venting will cool attic temperature.
- D. Soffit venting will lower the roof decks temperature.

Part 2 Product

- A. To achieve proper attic ventilation, install a minimum of 1 square foot of net free ventilation area for every 150 square feet of attic space measured at the attic floor level. See manufacturer's specifications.
- B. Soffit vents shall be durable with protection to keep insects out.
- C. Soffit vent styles and profile to match fascia aesthetically.
- D. Soffit vent strips may be hidden.

Part 3 Execution

- A. Install soffit vents following manufacturer's installation instructions.
- B. Secure soffit vents with approved fasteners. Follow manufacturer's installation instructions.
- C. Ensure all soffit vents are watertight. Follow manufacturer's specifications.
- D. Install soffit intake vents to balance with ridge exhaust vents.

Section 07710

Half-round Hung Gutter

.032 Aluminum Minimum

Part 1 General

- A. Half-rounded hung gutters have two methods of support:
1. Strap or hanger support
 2. Bracket support

Part 2 Products

- A. Half-rounded gutters are used where there is no fascia or fascia is deteriorated molding.
- B. Half-rounded gutters have manufactured corners and ends.
- C. Half-rounded gutters come in 10 and 20 foot lengths.

Part 3 Execution

- A. Straps are 1/16 X 3/4 in flat stock of the same material as the gutter.
- B. Straps go around the gutter and extend up the roof slope.
- C. Straps to be fastened to gutter and to the roof or roof deck.
- D. Brackets to be attached to fascia half-round the gutter to fit in half-round brackets. See Manufacturer's instructions.
- E. Seal all joints as per Manufacturer's recommendations.
- F. Expansion joints must be provided in all Half-round gutters. See Manufacturer's requirements.
- G. Half-round gutters to be sized according to the needs of the roof area.

Section 07710

Rectangular Downspouts

.025 Aluminum Minimum

Part 1 General

- A. Round downspouts come in two styles:

1. Plain rectangular
2. Corrugated round

B. Rectangular downspouts have elbows available in A & B Styles in 45, 60, 75, and 90 degrees.

Part 2 Products

A. Rectangular downspouts are joined to the gutter by means of an outlet tube.

B. Rectangular downspouts can be manufactured at custom lengths.

C. Standard lengths are 10 and 20 feet.

Part 3 **Execution**

A. Downspouts are fabricated with male and female ends for a solid fit.

B. Elbows are used to bring downspouts from gutter to wall and to go around projections down the wall.

C. Keep elbows at a minimum in icing areas.

D. Downspouts are to be secured to walls with downspout hangers on straps.

E. Hangers come in different designs or can be fabricated out of the same material as downspout. Hanger and straps should be two gauges heavier than downspout.

F. Use appropriate fasteners to secure bracket on the wall.

G. Space hangers according to Manufacturer's recommendations.

H. Downspout openings should be protected with screens to stop trash from entering the drainage system.

I. Downspouts should be sized to roof area and gutter size.

J. Downspout drops should be spaced evenly.

Congratulations!!

Your roof specification is now complete.

Now its time to solicit competitive bids from local roofing contractors.

Step #1: Make photocopies of the complete roof specification, (everything downloaded with the exception of this instruction page) for the Roofing Contractors you are inviting to bid your project. Suggested number of Contractors is 3-4.

Step #2: Distribute copies of your roof specification to the 3-4 Contractors you have selected. (Make sure you have entered a "Bid due date" on the bid form before you distribute the copies.) If you need help finding a local contractor, use our proprietary GPS Gateway Search. Just fill in your project zip code, click "GO" and you will be provided with a list of contractors in your area.

Following is a suggested check-list of Do's and Don'ts for your roofing project:

DO:

- ✓ obtain a minimum of three bids
- ✓ obtain copies of local/state licenses where required
- ✓ check contractor references
- ✓ obtain insurance certificate from contractor
- ✓ have a signed contract
- ✓ photograph your home & yard prior to commencement of work
- ✓ obtain copies of all required building permits
- ✓ select roofing material type and color
- ✓ cover outdoor furnishings & automobiles under roof removal area
- ✓ ensure safety of all family pets
- ✓ notify the contractor in writing of any incidents or damage
- ✓ obtain a release of lien for labor & material

DON't:

- ✓ give the contractor a deposit
- ✓ pay for any material until delivered to the job site
- ✓ let contractor begin work without a signed contract
- ✓ make any verbal agreements
- ✓ pay contractor in full before clean-up is completed
- ✓ hire a contractor that does not carry Workers Compensation Insurance.
- ✓ hire an uninsured contractor
- ✓ allow anyone to start work without issuance of insurance certificate naming you as additional insured.

Residential Bid Form

Residents Name: Bob Johnston
Address: 600 West Hillsboro Blvd.Suite 110
City: Deerfield Beach
State: FL
Zip Code: 33441
Home Phone: 866-222-7663
Work Phone:

The undersigned contractor, hereinafter called "BIDDER" having received the proposed bid document entitled _____, I (we) have examined them and apprised myself (ourselves) of the requirements, scope, extent, materials and methods; have visited the site of the work and familiarized myself (ourselves) with all conditions that might affect my (our) operations. I (we) agree to provide all equipment, tools, materials, and labor required to complete the work scope.

Product Manufactures Name: _____

Manufacturer's Warranty Term: _____

Insurance Company Name: _____

Insurance Certificate Attached? Yes No

Sub-contractors Insurance Certificated Attached if applicable? Yes No

It is the owner's responsibility to insure that all contractors/sub-contractors insurance is in place and that the owner is named as an additional insured by the awarded contractor.

Starting Date: _____

Completion Date: _____

Lump Sum total Labor and Material, including tax: \$ _____

My (our) Lump Sum Bid amount includes the cost of all permits, environmental requirements, inspections by authorities having jurisdiction, taxes, and insurance premium amounts.

Unit Cost Amount:

Wood Fascia per Linear Foot - _____

Wood Decking per Square Foot - _____

Wood Soffits per Linear Foot - _____

Gutter & Downspout new - _____

Gutter & Downspout replacement - _____

The undersigned agrees to hold this bid open for a period of _____ days starting with the required submission date for same.

The bidder agrees that the owner reserves the right to reject this bid, or to waive informalities in any bid, or to award such alternates that in its judgment will be for the best interest of the owner.

DEFECTIVE DOCUMENTS: Bidder hereby certifies that the attached list includes any and all defects, errors, inconsistencies or omissions of which he is aware, either directly or by notification from any sub-bidder or material supplier, in the Bidding/Contract Document.

IDENTIFICATION OF BIDDER: If a corporation, state name, name of President and Secretary. If a partnership, state names of general partners authorized to sign. If an individual, give legal name of Bidder and full name of the person authorized to sign.

Respectfully proposed by:

Contractors approved Agent: _____

Name Signature

Name Printed

Date

After the specification is printed, the user is led to block 960 which enables him to browse contractors and a manufacturer's list of approved applicators (of the manufacturers product) within a geographical sector (typically 20 to 30 miles with the exception of isolated areas of the country). Therein, the user is provided with both ARTi's evaluations of contractors within the geographical area (database 970) and links to the area contractors' promotional information (block 980).

It has been discovered by the within inventors that upon about 40 combinations of city, state and federal building codes (as stored in said databases 920, 930 and 940), taken in combination with the DSD supported answers to the questions of questionnaire 600, can enable specification 900 to be produced without requirement of a costly mainframe computer. Rather, the same can be accomplished through the use of far more economical hardware such as a network server

After the user has completed review of the information of blocks 960, the evaluations of database 970, and the contractor links 980, ARTi instructs the user either to send an e-mail direct to a selected contractor or to make copies of the specification and distribute them to various approved contractors (obtained at block 960) for purposes of bidding on the specification.

With respect to commercial or institutional applications, the same will apply if, responsive to choice point 250 in Fig. 2, selection is made of commercial 300 or institutional 320. In such event, questionnaire 600 is much more detailed as is necessary for commercial and institutional applications. In addition, applicable building codes (see Fig. 5) will of course differ for commercial and institutional applications.

In order to accommodate the multitude of additional variables involved in a commercial construction, ARTi, The Certified Cyber-roof Consultant icon, will be much more prevalent on the commercial questionnaire. That is, enhanced numbers of hints 665, warning 670 and suggestions 675 will occur in the commercial and institutional questionnaires. Therein, the user will be asked various questions about surveys and examinations of any existing roof and deck. Also, the resulting specification will be much more detailed for commercial users.

While there has been shown and described the preferred embodiment of the instant invention it is to be appreciated that the invention may be embodied otherwise than is herein specifically shown and described and that, within said embodiment, certain changes may be made in the form and arrangement of the parts without departing from the underlying ideas or principles of this invention as set forth in the Claims appended herewith.